IN THE CLAIMS

1. (currently amended) A fire retardant polymer composition comprising:

a polymer material comprising polyurethane;

a plurality of monomers of a polycondensed partially hydrolyzed chelated metal oxide precursor; and

at least one flame retardant constituent.

2. (currently amended) The fire retardant polymer composition of claim 1, wherein said polymer material further comprises at least one member selected from the group consisting of an acrylic, an unsaturated polyester, a saturated polyester, an alkyd, a vinyl ester, ~~a polyurethane,~~ an epoxy, a phenol, an urea-aldehyde, a polyvinyl aromatic, a maleimide, a polyvinyl halide, a polyolefin, a polyorganosiloxane, an amino resin, a polyamide, a polyimide, a polyetherimide, a polyphenylene sulfide, an aromatic polysulfone, a polyamideimide, a polyesterimide, a polyesteramideimide, a polyvinyl acetal, a fluorinated polymer, and a polycarbonate.

3. (currently amended) The fire retardant polymer composition of claim 1, wherein said polycondensed partially hydrolyzed chelated metal oxide precursor comprises at least one metal selected from the group consisting of a transition metal, an alkaline earth metal and a metallic element from Groups 3A, 4A and 5A of the periodic table of elements.

4. (currently amended) The fire retardant polymer composition of claim 1, wherein said polycondensed partially hydrolyzed chelated metal oxide precursor comprises at

least one metal selected from the group consisting of aluminum, antimony, bismuth, calcium, chromium, magnesium, tin, titanium, zinc, and zirconium.

5. (currently amended) The fire retardant polymer composition of claim 1, wherein the polycondensed partially hydrolyzed chelated metal oxide precursor comprises at least one multifunctional compound containing at least one chelating group coordinated to at least one metal selected from the group consisting of an alkaline earth metal, a transition metal, a Group 3A metal, a Group 4A metal and a Group 5A metal.

6. (currently amended) The fire retardant polymer composition of claim 1, wherein the polycondensed partially hydrolyzed chelated metal oxide precursor comprises at least one multifunctional compound selected from the group ~~comprising~~ consisting of alkoxylated diamines, aminoalkylphosphonic acid, amino tris(methylene phosphonic acid), citric acid, diethylenetriamine pentaacetic acid, ethylenediaminetetraacetic acid, gluconic acid, glucoheptonoic acid, hexamethylenediamine tetra(methylene phosphonic acid), 2-(methacryloyloxy)ethyl acetoacetate, 5-(methacryloyloxy)methyl salicylic acid, 4-methacryloylamino salicylic acid, hydroxyethyl salicylate, hydroxyethyl salicylamide, 2-(2-hydroxy ethoxy) phenol, o-hydroxybenzoylacetone, 5-hydroxy-2-(hydroxymethyl)-4H-pyran-4-one, N-hydroxyethylenediaminetriacetic acid, hydroxyethylidene diphosphonic acid, hydroxyethane diphosphonic acid, nitrilotriacetic acid, sorbitol, tolyltrizole, o-hydroxybenzoylacetone, 2-hydroxydibensoylmethane, N-(acetoacetyl)glycine, acetylacetone, poly(ethylene glycol) methacrylate, and poly(propylene glycol) methacrylate.

7. (currently amended) The fire retardant polymer composition of claim 1, wherein the polycondensed partially hydrolyzed chelated metal oxide precursor comprises at least one supplemental multifunctional compound selected from the group ~~comprising~~

consisting of acetylacetone, poly(ethylene glycol) methacrylate, poly(propylene glycol) methacrylate, salicylic acid, 3-hydroxy-2-methyl-4-pyrone, and 8-hydroxyquinolone.

8. (currently amended) The fire retardant polymer composition of claim 1, wherein said at least one flame retardant constituent comprises at least one constituent selected from the group consisting of a halogen-based, a phosphorous-based, a nitrogen-based and a sulfur-based flame retardant ~~constituent~~.

9. (currently amended) The fire retardant polymer composition of claim 1, further comprising at least one constituent selected from the group consisting of a blowing agent, a fibrous reinforcing material, a pigment, a mold release agent, a thermoplastic polymeric material, an elastomeric polymeric material, a shrink control agent, a wetting agent, an antifoam agent, a surface treatment agent, a surface treatment agent, and a thickener.

10. (original) The fire retardant polymer composition of claim 1, wherein said fire retardant polymer composition is transparent.

11. (currently amended) A process for making a flame retardant polymer composition comprising the steps of:

contacting a polymer material comprising polyurethane with a metal oxide sol comprising a liquid and a condensation product of a partially hydrolyzed chelated metal oxide precursor to form a mixture;

contacting said polymer material with at least one flame retardant constituent; and

performing at least one step selected from the group consisting of polymerizing said polymer material and solidifying said polymer material.

12. (currently amended) The process of claim 11, ~~the process further comprising the step of selecting~~ wherein said polymer material further comprises at least one member selected from the group ~~comprising~~ consisting of an acrylic, an unsaturated polyester, a saturated polyester, an alkyd, a vinyl ester, a polyurethane, an epoxy, a phenol, an urea-aldehyde, a polyvinyl aromatic, a maleimide, a polyvinyl halide, a polyolefin, a polyorganosiloxane, an amino resin, a polyamide, a polyimide, a polyetherimide, a polyphenylene sulfide, an aromatic polysulfone, a polyamideimide, a polyesterimide, a polyesteramideimide, a polyvinyl acetal, a fluorinated polymer, and a polycarbonate.

13. (currently amended) The process of claim 11, the process further comprising the step of formulating said metal oxide sol by contacting at least one metal oxide precursor with at least one multifunctional compound.

14. (currently amended) The process of claim 13, the process further comprising the step of selecting said at least one metal oxide precursor from the group ~~comprising at least one of~~ consisting of a transition metal, an alkaline earth metal and a metallic element from Groups 3A, 4A and 5A of the periodic table of elements.

15. (currently amended) The process of claim 13, the process further comprising the step of selecting said at least one multifunctional compound from the group ~~comprising~~ consisting of alkoxylated diamines, aminoalkylphosphonic acid, amino tris(methylene phosphonic acid), citric acid, diethylenetriamine pentaacetic acid, ethylenediaminetetraacetic acid, gluconic acid, glucoheptonoic acid, hexamethylenediamine tetra(methylene phosphonic

acid), 2-(methacryloyloxy)ethyl acetoacetate, 5-(methacryloyloxy)methyl salicylic acid, 4-methacryloylamino salicylic acid, hydroxyethyl salicylate, hydroxyethyl salicylamide, 2-(2-hydroxy ethoxy) phenol, o-hydroxybenzoylacetone, 5-hydroxy-2-(hydroxymethyl)-4H-pyran-4-one, N-hydroxyethylenediaminetriacetic acid, hydroxyethylidene diphosphonic acid, hydroxyethane diphosphonic acid, nitrilotriacetic acid, sorbitol, tolyltrizole, o-hydroxybenzoylacetone, 2-hydroxydibensoylmethane, N-(acetoacetyl)glycine, acetylacetone, poly(ethylene glycol) methacrylate, and poly(propylene glycol) methacrylate.

16. (currently amended) The process of claim 13, the process further comprising the step of formulating said at least one metal oxide sol by contacting said at least one metal oxide precursor with at least one supplemental multifunctional compound~~, said supplemental multifunctional compound~~ selected from the group ~~comprising~~ consisting of acetylacetone, poly(ethylene glycol) methacrylate, poly(propylene glycol) methacrylate, salicylic acid, 3-hydroxy-2-methyl-4-pyrone, and 8-hydroxyquinolone.

17. (currently amended) The process of claim 11, the process further comprising the step of removing said liquid from said mixture prior to the step of performing at least one step selected from the group selected from the group consisting of polymerizing and solidifying said polymer material.

18. (currently amended) The process of claim 11, the process further comprising the step of removing said liquid from said mixture after the step of performing at least one step selected from the group selected from the group consisting of polymerizing and solidifying said polymer material.

19. (currently amended) The process of claim 11, wherein said step of combining said mixture with at least one flame retardant constituent comprises selecting said at least one flame retardant constituent from the group ~~comprising~~ consisting of a halogen-based, a phosphorous-based, a nitrogen-based and a sulfur-based flame retardant constituent.

20. (currently amended) The process of claim 11, the process further comprising the step of contacting said mixture with at least one ingredient selected from the group ~~comprising~~ consisting of a blowing agent, a fibrous reinforcing material, a pigment, a mold release agent, a thermoplastic polymeric material, an elastomeric polymeric material, a shrink control agent, a wetting agent, an antifoam agent, a surface treatment agent, and a thickener.

21. (original) The process of claim 11, wherein said step of contacting said polymer material with at least one flame retardant constituent is performed after said step of contacting said polymer material with a metal oxide sol.

22. (currently amended) A fire retardant polymer foam composition comprising:

a polymer material comprising polyurethane;

a plurality of monomers of a polycondensed partially hydrolyzed chelated metal oxide precursor;

a flame retardant constituent; and

a blowing agent.

23. (canceled).

24. (currently amended) The fire retardant polymer foam composition of claim 22, wherein said partially hydrolyzed chelated metal oxide precursor comprises at least one metal selected from the group consisting of a transition metal, an alkaline earth metal and a metallic element from Groups 3A, 4A and 5A of the periodic table of elements.

25. (currently amended) The fire retardant polymer foam composition of claim 24, wherein said partially hydrolyzed chelated metal oxide precursor comprises at least one metal selected from the group consisting of aluminum, antimony, bismuth, calcium, chromium, magnesium, tin, titanium, zinc and zirconium.

26. (currently amended) The fire retardant polymer foam composition of claim 22, wherein the partially hydrolyzed chelated metal oxide precursor comprises at least one multifunctional compound containing at least one chelating group coordinated to at least one metal selected from the group consisting of an alkaline earth metal, a transition metal, a Group 3A metal, a Group 4A metal and a Group 5A metal.

27. (currently amended) The fire retardant polymer foam composition of claim 22, wherein the partially hydrolyzed chelated metal oxide precursor comprises a multifunctional compound selected from the group ~~comprising~~ consisting of alkoxylated diamines, aminoalkylphosphonic acid, amino tris(methylene phosphonic acid), citric acid, diethylenetriamine pentaacetic acid, ethylenediaminetetraacetic acid, gluconic acid, glucoheptonoic acid, hexamethylenediamine tetra(methylene phosphonic acid), 2-(methacryloyloxy)ethyl acetoacetate, 5-(methacryloyloxy)methyl salicylic acid, 4-methacryloylamino salicylic acid, hydroxyethyl salicylate, hydroxyethyl salicylamide, 2-(2-hydroxy ethoxy) phenol, o-hydroxybenzoylacetone, 5-hydroxy-2-(hydroxymethyl)-4H-pyran-4-one, N-hydroxyethylenediaminetriacetic acid, hydroxyethylidene diphosphonic acid, hydroxyethane diphosphonic acid, nitrilotriacetic acid, sorbitol, tolyltrizole, o-

hydroxybenzoylacetone, 2-hydroxydibensoylmethane, N-(acetoacetyl)glycine, acetylacetone, poly(ethylene glycol) methacrylate, and poly(propylene glycol) methacrylate.

28. (currently amended) The fire retardant polymer foam composition of claim 22, wherein said at least one flame retardant constituent comprises at least one constituent selected from the group consisting of a halogen-based, a phosphorous-based, a nitrogen-based and a sulfur-based flame retardant ~~constituent~~.